

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

as011
.452

I

X

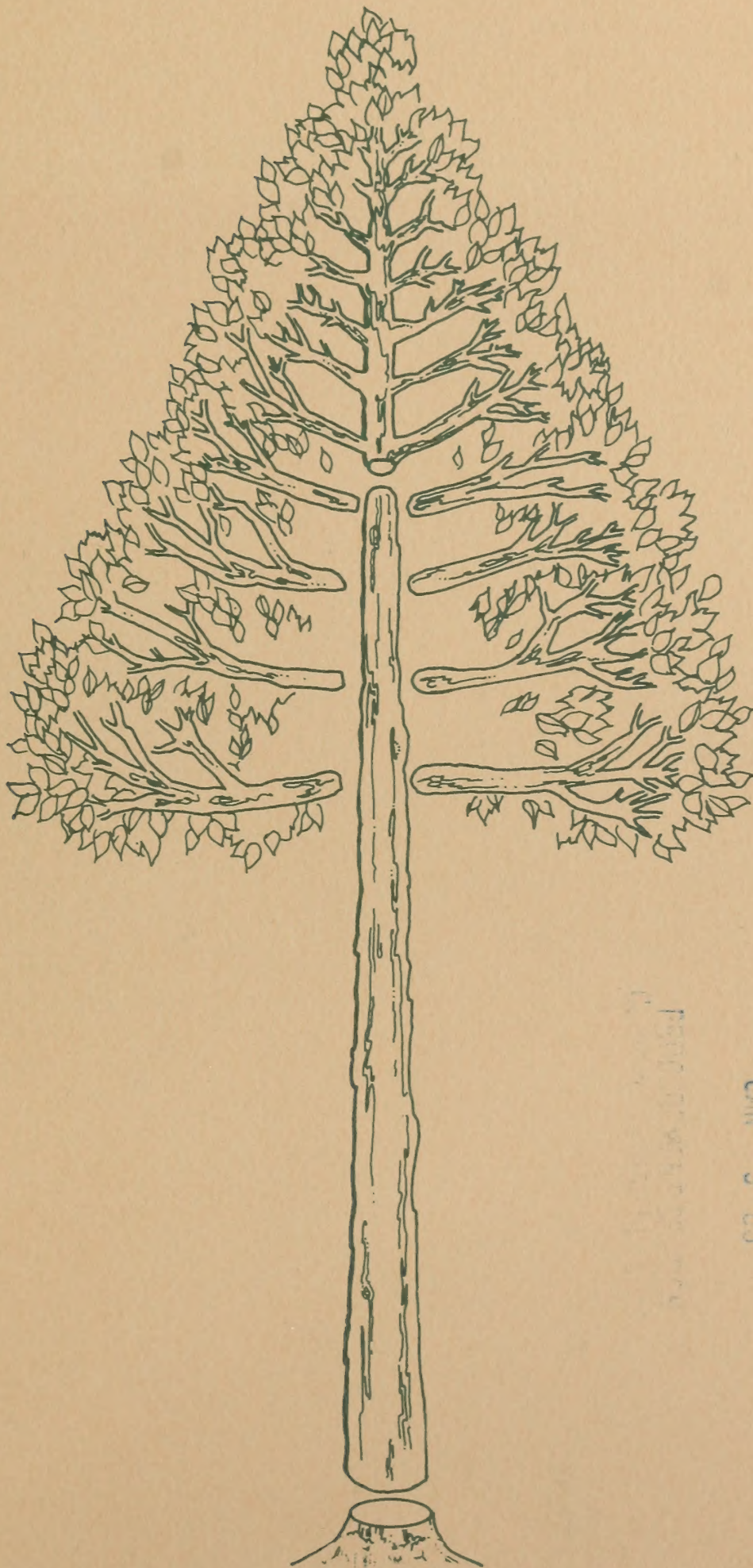


United States
Department of
Agriculture

Forest
Service

General
Technical
Report WO-33

Tree Biomass — A State-of-the-Art Compilation



JAN 9 '65

U.S. DEPT. OF AGRICULTURE
NAT'L AGRIC. LIBRARY
RECEIVED

TREE BIOMASS—
A State-of-the-Art Compilation

United States Department of Agriculture
Forest Service
Washington, D.C.

General Technical Report WO-33

November 1981

National Tree Biomass Compilation Committee Members

James T. Bones, National Coordinator,
Washington, D.C.

Gerhard K. Raile, North Central Forest
Experiment Station,
St. Paul, Minn.

Eric H. Wharton, Northeastern Forest
Experiment Station, Broomall, Pa.

Noel D. Cost, Southeastern Forest
Experiment Station, Asheville, N.C.

Charles E. Thomas, Southern Forest
Experiment Station,
New Orleans, La.

Kenneth Skog, Forest Products
Laboratory, Madison, Wisc.

Dwane D. Van Hooser, Intermountain
Forest and Range Experiment
Station, Ogden, Utah

James O. Howard, Pacific Northwest
Forest and Range Experiment
Station, Portland, Oreg.

Vernon J. LaBau, Pacific Northwest
Forest and Range Experiment
Station, Anchorage, Alaska

INTRODUCTION

Until recently, forest products were made principally from the main stem, called the merchantable bole,^{1/} of trees. Decreasing tree sizes, increasing extraction and processing costs, new product development, increasing competition for wood, and the energy crisis have all focused attention on extending timber utilization to include the total aboveground portion of the tree. Tree crowns can be utilized as fuel for domestic and industrial purposes or, fiber for pulp and paper and composite board products, as a soil amendment or mulch in agriculture, and a bulking agent in municipal sludge composting. In view of this, whole-tree utilization is being recognized as a potentially viable forestry practice.

Because technology has preceded research programs in forest mensuration and inventory methods, information is lacking regarding the amount of wood and bark contained in the tree as a whole and particularly in the crown component. Such information is vital if land managers and timber resource planners are to be able to make logical decisions about timber management and timber procurement on a whole-tree basis. Statewide, regional, and national tree biomass statistics must be available for public and private planning purposes.

In January 1980, a National Tree Biomass Compilation Committee was formed with representatives from Renewable Resources Evaluation Research work units throughout the Nation. The committee was charged with developing a program to

satisfy the information needs. A three-phased program was developed.

The first phase consisted of carrying out a biomass compilation based on state-of-the-art methods that were available to the individual research work units.

In the Lake States, Rocky Mountain, and Pacific Coast regions compilation was based on converting merchantable bole volumes to weight and applying a series of conversion factors that were developed from experience data to compensate for the bark, top, and branch components. Eastern and Alaska research units were able to assemble enough usable existing tree weight equations to adopt an individual tree weight estimation approach. These tree weight equations were applied to stand tables from the most recent statewide forest inventories to produce the required weight statistics. The results of this compilation are presented in this publication.

Phase two is an ongoing process and consists of identification of research needs based on deficiencies recognized during the tree biomass compilation phase. In the West, this includes the development and improvement of tree weight equations for important tree species in locations where there are none. In the East, methods of sample tree selection for use in constructing biomass tables specifically for regional forest inventories have been identified as shortcomings. Many of the existing equations are too site or location specific, are based on too few sample trees, or sample trees are not representative of the total population of trees within species groupings.

^{1/} Terms defined in Glossary.

The third phase of the committee's work involves the integration of biomass estimation into the resources evaluation inventory system. Once this is accomplished, statewide analyses of tree biomass, its availability, and

the competition between wood for fuel and for fiber products can be assessed. The time needed to realize this goal will depend to a great extent on how rapidly the research identified in phase two can be completed and the findings applied.

ACCURACY OF STATISTICS

The statistics contained in this publication must be considered as best estimates because of the varying methods used in deriving them. While in some States the statistics are based on inventories with known sampling errors, most

tree weight equations are not supported by statistically reliable tree samples. Species lacking acceptable tree weight equations were grouped with other species having similar green weight, crown form, and tree size distribution.

LIST OF TABLES

1. Total green weight of aboveground tree biomass on commercial forest land in the United States by class of timber, species group, section, and region.
2. Total green weight of aboveground tree biomass on commercial forest land in the North by class of timber, species group, section, and State.
3. Total green weight of aboveground tree biomass on commercial forest land in the South by class of timber, species group, section, and State.
4. Total green weight of aboveground tree biomass on commercial forest land in the West by class of timber, species group, section, and State.
5. Per-acre green weight of aboveground tree biomass on commercial forest land in the North by class of timber, species group, section, and State.
6. Per-acre green weight of aboveground tree biomass on commercial forest land in the South by class of timber, species group, section, and State.
7. Per-acre green weight of aboveground tree biomass on commercial forest land in the West by class of timber, species group, section, and State.
8. Total green weight of aboveground softwood tree biomass on commercial forest land in the eastern United States by species, diameter class, section, and region.
9. Total green weight of aboveground hardwood tree biomass on commercial forest land in the eastern United States by species, diameter class, section, and region.
10. Total green weight of aboveground softwood tree biomass on commercial forest land in the western United States by species, diameter class, section, and region.
11. Total green weight of aboveground hardwood tree biomass on commercial forest land in the western United States by species, diameter class, section, and region.
12. Total green weight of aboveground tree biomass on commercial forest land in the United States by ownership, section, and region.
13. Total green weight of aboveground tree biomass on commercial forest land in the North by ownership, section, and State.
14. Total green weight of aboveground tree biomass on commercial forest land in the South by ownership, section, and State.
15. Total green weight of aboveground tree biomass on commercial forest land in the West by ownership, section, and State.

Table 1.--Total green weight of aboveground tree biomass on commercial forest land in the United States by class of timber, species group, section, and region

1-1

(Million green tons)

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
New England Softwoods	649.8	250.1	899.9	106.2	37.6	143.8	177.9	1,221.6
Hardwoods	576.2	161.3	737.5	218.8	60.3	279.1	218.5	1,235.1
Total	1,226.0	411.4	1,637.4	325.0	97.9	422.9	396.4	2,456.7
Middle Atlantic Softwoods	244.9	80.6	325.5	44.5	16.0	60.5	56.2	442.2
Hardwoods	1,929.9	531.2	2,461.1	469.2	131.9	601.1	543.5	3,605.7
Total	2,174.8	611.8	2,786.6	513.7	147.9	661.6	599.7	4,047.9
Lake States Softwoods	289.2	139.6	428.8	14.1	13.2	27.3	137.2	593.3
Hardwoods	878.6	407.0	1,285.6	146.6	109.8	256.4	279.0	1,821.0
Total	1,167.8	546.6	1,714.4	160.7	123.0	283.7	416.2	2,414.3
Central States Softwoods	70.5	34.6	105.1	9.6	4.5	14.1	21.9	140.1
Hardwoods	1,381.5	454.4	1,835.9	275.5	146.5	422.0	322.8	2,580.7
Total	1,452.0	489.0	1,941.0	285.1	151.0	436.1	343.7	2,720.8
Total, North Softwoods	1,254.4	504.9	1,759.3	174.4	71.3	245.7	393.2	2,397.2
Hardwoods	4,766.2	1,553.9	6,320.1	1,110.1	448.5	1,558.6	1,363.8	9,242.5
Total	6,020.6	2,058.8	8,079.4	1,284.5	519.8	1,804.3	1,756.0	11,639.7
South Atlantic Softwoods	910.1	171.7	1,081.8	21.3	9.5	30.8	118.5	1,231.1
Hardwoods	1,432.1	342.4	1,774.5	303.2	103.1	406.3	427.6	2,608.4
Total	2,342.2	514.1	2,856.3	324.5	112.6	437.1	546.1	3,839.5
East Gulf Softwoods	866.7	184.1	1,050.8	13.2	4.7	17.9	155.6	1,224.3
Hardwoods	578.8	145.4	724.2	180.7	55.0	235.7	234.4	1,194.3
Total	1,445.5	329.5	1,775.0	193.9	59.7	253.6	390.0	2,418.6
Central Gulf Softwoods	951.3	172.1	1,123.4	27.2	4.9	32.1	395.3	1,550.8
Hardwoods	1,118.6	223.3	1,341.9	465.9	96.8	562.7	656.8	2,561.4
Total	2,069.9	395.4	2,465.3	493.1	101.7	594.8	1,052.1	4,112.2
West Gulf Softwoods	1,123.4	200.6	1,324.0	31.2	5.6	36.8	286.9	1,647.7
Hardwoods	1,046.9	201.9	1,248.8	441.2	87.7	528.9	552.3	2,330.0
Total	2,170.3	402.5	2,572.8	472.4	93.3	565.7	839.2	3,977.7
Total, South Softwoods	3,851.5	728.5	4,580.0	92.9	24.7	117.6	956.3	5,653.9
Hardwoods	4,176.4	913.0	5,089.4	1,391.0	342.6	1,733.6	1,871.1	8,694.1
Total	8,027.9	1,641.5	9,669.4	1,483.9	367.3	1,851.2	2,827.4	14,348.0

United States by class of timber, species group, section, and region

(Million green tons)

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Pacific Northwest								
Softwoods	3,140.3	340.7	3,481.0	82.5	17.5	100.0	206.7	3,787.7
Hardwoods	299.0	55.3	354.3	44.8	14.1	58.9	81.9	495.1
Total	3,439.3	396.0	3,835.3	127.3	31.6	158.9	288.6	4,282.8
Coastal Alaska								
Softwoods	880.9	279.1	1,160.0	39.2	12.4	51.6	21.1	1,232.7
Hardwoods	6.1	2.4	8.5	0.2	0.1	0.3	0.5	9.3
Total	887.0	281.5	1,168.5	39.4	12.5	51.9	21.6	1,242.0
Interior Alaska								
Softwoods	66.9	23.1	90.0	0.6	0.2	0.8	6.2	97.0
Hardwoods	57.9	36.4	94.3	2.4	1.5	3.9	30.8	129.0
Total	124.8	59.5	184.3	3.0	1.7	4.7	37.0	226.0
Pacific Southwest								
Softwoods	1,051.5	90.2	1,141.6	20.6	3.6	24.2	50.5	1,216.3
Hardwoods	122.7	24.2	147.0	28.0	8.9	36.9	31.1	215.0
Total	1,174.2	114.4	1,288.6	48.6	12.5	61.1	81.6	1,431.3
Northern Rocky Mtn.								
Softwoods	1,239.1	415.4	1,654.5	35.4	20.7	56.1	190.8	1,901.4
Hardwoods	12.1	3.9	16.0	3.2	1.1	4.3	2.4	22.7
Total	1,251.2	419.3	1,670.5	38.6	21.8	60.4	193.2	1,924.1
Southern Rocky Mtn.								
Softwoods	461.8	189.5	651.3	19.7	15.8	35.5	71.0	757.8
Hardwoods	67.3	18.1	85.4	26.5	10.1	36.6	15.9	137.9
Total	529.1	207.6	736.7	46.2	25.9	72.1	86.9	895.7
Total, West								
Softwoods	6,840.5	1,338.0	8,178.4	198.0	70.2	268.2	546.3	8,992.9
Hardwoods	565.1	140.3	705.5	105.1	35.8	140.9	162.6	1,009.0
Total	7,405.6	1,478.3	8,883.9	303.1	106.0	409.1	708.9	10,001.9
Total, All Regions								
Softwoods	11,946.4	2,571.4	14,517.7	465.3	166.2	631.5	1,895.8	17,044.0
Hardwoods	9,507.7	2,607.2	12,115.0	2,606.2	826.9	3,433.1	3,397.5	18,945.6
Total	21,454.1	5,178.6	26,632.7	3,071.5	993.1	4,064.6	5,292.3	35,989.6

Table 2.--Total green weight of aboveground tree biomass on commercial forest land in the North by class of timber, species group, section, and State (Million green tons)

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
New England:								
Connecticut								
Softwoods	11.6	3.9	15.5	1.1	0.4	1.5	1.6	18.6
Hardwoods	51.6	13.2	64.8	4.9	1.3	6.2	10.9	81.9
Total	63.2	17.1	80.3	6.0	1.7	7.7	12.5	100.5
Maine								
Softwoods	437.3	175.6	612.9	74.7	26.2	100.9	134.1	847.9
Hardwoods	247.9	73.6	321.5	103.4	29.5	132.9	118.0	572.4
Total	685.2	249.2	934.4	178.1	55.7	233.8	252.1	1,420.3
Massachusetts								
Softwoods	43.7	15.2	58.9	4.6	1.6	6.2	5.3	70.4
Hardwoods	57.4	14.7	72.1	11.3	2.9	14.2	18.2	104.5
Total	101.1	29.9	131.0	15.9	4.5	20.4	23.5	174.9
New Hampshire								
Softwoods	95.2	34.6	129.8	11.5	4.0	15.5	22.2	167.5
Hardwoods	96.8	27.1	123.9	33.8	9.3	43.1	39.8	206.8
Total	192.0	61.7	253.7	45.3	13.3	58.6	62.0	374.3
Rhode Island								
Softwoods	2.5	0.9	3.4	1.4	0.6	2.0	0.6	6.0
Hardwoods	7.8	2.0	9.8	1.9	0.5	2.4	2.3	14.5
Total	10.3	2.9	13.2	3.3	1.1	4.4	2.9	20.5
Vermont								
Softwoods	59.5	19.9	79.4	12.9	4.8	17.7	14.1	111.2
Hardwoods	114.7	30.7	145.4	63.5	16.8	80.3	29.3	255.0
Total	174.2	50.6	224.8	76.4	21.6	98.0	43.4	366.2
Total, New England								
Softwoods	649.8	250.1	899.9	106.2	37.6	143.8	177.9	1,221.6
Hardwoods	576.2	161.3	737.5	218.8	60.3	279.1	218.5	1,235.1
Total	1,226.0	411.4	1,637.4	325.0	97.9	422.9	396.4	2,456.7

Table 2.--Total green weight of aboveground tree biomass on commercial forest land in the North by class of timber, species group, section, and State (Million green tons)

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Middle Atlantic:								
Delaware								
Softwoods	5.6	1.0	6.6	0.1	1/	0.1	0.6	7.3
Hardwoods	20.3	4.9	25.2	2.2	0.5	2.7	5.3	33.2
Total	25.9	5.9	31.8	2.3	0.5	2.8	5.9	40.5
Maryland								
Softwoods	33.9	7.0	40.9	3.7	1.5	5.2	3.5	49.6
Hardwoods	122.2	33.9	156.1	43.5	11.1	54.6	21.3	232.0
Total	156.1	40.9	197.0	47.2	12.6	59.8	24.8	281.6
New Jersey								
Softwoods	10.1	4.0	14.1	1.1	0.5	1.6	4.2	19.9
Hardwoods	62.8	15.1	77.9	7.9	1.9	9.8	20.0	107.7
Total	72.9	19.1	92.0	9.0	2.4	11.4	24.2	127.6
New York								
Softwoods	100.5	37.4	137.9	30.2	10.2	40.4	28.0	206.3
Hardwoods	325.6	95.1	420.7	165.1	45.6	210.7	163.0	794.4
Total	426.1	132.5	558.6	195.3	55.8	251.1	191.0	1,000.7
Pennsylvania								
Softwoods	66.3	20.6	86.9	6.3	2.5	8.8	14.0	109.7
Hardwoods	845.8	249.1	1,094.9	78.1	31.3	109.4	182.7	1,387.0
Total	912.1	269.7	1,181.8	84.4	33.8	118.2	196.7	1,496.7
West Virginia								
Softwoods	28.5	10.6	39.1	3.1	1.3	4.4	5.9	49.4
Hardwoods	553.2	133.1	686.3	172.4	41.5	213.9	151.2	1,051.4
Total	581.7	143.7	725.4	175.5	42.8	218.3	157.1	1,100.8
Total, Middle Atlantic								
Softwoods	244.9	80.6	325.5	44.5	16.0	60.5	56.2	442.2
Hardwoods	1,929.9	531.2	2,461.1	469.2	131.9	601.1	543.5	3,605.7
Total	2,174.8	611.8	2,786.6	513.7	147.9	661.6	599.7	4,047.9

1/Less than 0.05 million green tons.

Table 2.--Total green weight of aboveground tree biomass on commercial forest land in the
North by class of timber, species group, section, and State
(Million green tons)

(continued) 2-3

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Lake States:								
Michigan								
Softwoods	125.4	61.4	186.8	5.1	5.6	10.7	55.0	252.5
Hardwoods	390.2	178.2	568.4	47.1	35.7	82.8	126.7	777.9
Total	515.6	239.6	755.2	52.2	41.3	93.5	181.7	1,030.4
Minnesota								
Softwoods	80.2	38.4	118.6	5.2	3.6	8.8	56.0	183.4
Hardwoods	222.5	108.8	331.3	39.3	28.7	68.0	79.6	478.9
Total	302.7	147.2	449.9	44.5	32.3	76.8	135.6	662.3
North Dakota								
Softwoods	0.1	1/	0.1	1/	1/	1/	1/	0.1
Hardwoods	6.0	2.8	8.8	2.7	1.6	4.3	2.7	15.8
Total	6.1	2.8	8.9	2.7	1.6	4.3	2.7	15.9
South Dakota (East)								
Softwoods	1.0	0.5	1.5	0.1	0.1	0.2	0.2	1.9
Hardwoods	3.9	1.9	5.8	1.9	1.5	3.4	0.5	9.7
Total	4.9	2.4	7.3	2.0	1.6	3.6	0.7	11.6
Wisconsin								
Softwoods	82.5	39.3	121.8	3.7	3.9	7.6	26.0	155.4
Hardwoods	256.0	115.3	371.3	55.6	42.3	97.9	69.5	538.7
Total	338.5	154.6	493.1	59.3	46.2	105.5	95.5	694.1
Total, Lake States								
Softwoods	289.2	139.6	428.8	14.1	13.2	27.3	137.2	593.3
Hardwoods	878.6	407.0	1,285.6	146.6	109.8	256.4	279.0	1,821.0
Total	1,167.8	546.6	1,714.4	160.7	123.0	283.7	416.2	2,414.3

1/Less than 0.05 million green tons.

Table 2.--Total green weight of aboveground tree biomass on commercial forest land in the North by class of timber, species group, section, and State (Million green tons) (continued) 2-4

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Central States:								
Illinois								
Softwoods	0.9	0.5	1.4	0.1	0.1	0.2	0.5	2.1
Hardwoods	89.9	41.1	131.0	10.9	8.4	19.3	15.0	165.3
Total	90.8	41.6	132.4	11.0	8.5	19.5	15.5	167.4
Indiana								
Softwoods	2.3	1.1	3.4	0.1	0.1	0.2	1.3	4.9
Hardwoods	110.2	50.7	160.9	13.8	10.5	24.3	25.7	210.9
Total	112.5	51.8	164.3	13.9	10.6	24.5	27.0	215.8
Iowa								
Softwoods	0.2	0.1	0.3	0.1	0.1	0.2	0.1	0.6
Hardwoods	34.1	15.6	49.7	9.4	7.4	16.8	8.9	75.4
Total	34.3	15.7	50.0	9.5	7.5	17.0	9.0	76.0
Kansas								
Softwoods	1/	1/	1/	0.1	1/	0.1	1/	0.1
Hardwoods	17.8	8.3	26.1	14.8	11.6	26.4	5.6	58.1
Total	17.8	8.3	26.1	14.9	11.6	26.5	5.6	58.2
Kentucky								
Softwoods	41.1	19.2	60.3	7.7	3.1	10.8	10.2	81.3
Hardwoods	591.6	142.4	734.0	93.4	22.5	115.9	80.4	930.3
Total	632.7	161.6	794.3	101.1	25.6	126.7	90.6	1,011.6
Missouri								
Softwoods	12.0	6.5	18.5	0.7	0.6	1.3	5.8	25.6
Hardwoods	216.3	95.3	311.6	86.3	66.7	153.0	99.9	564.5
Total	228.3	101.8	330.1	87.0	67.3	154.3	105.7	590.1
Nebraska								
Softwoods	5.9	3.1	9.0	0.3	0.3	0.6	0.7	10.3
Hardwoods	11.8	5.7	17.5	5.8	4.5	10.3	0.6	28.4
Total	17.7	8.8	26.5	6.1	4.8	10.9	1.3	38.7
Ohio								
Softwoods	8.1	4.1	12.2	0.5	0.2	0.7	2.3	15.2
Hardwoods	309.8	95.3	405.1	41.1	14.9	56.0	86.7	547.8
Total	317.9	99.4	417.3	41.6	15.1	56.7	89.0	563.0
Total, Central States								
Softwoods	70.5	34.6	105.1	9.6	4.5	14.1	21.9	140.1
Hardwoods	1,381.5	454.4	1,835.9	275.5	146.5	422.0	322.8	2,580.7
Total	1,452.0	489.0	1,941.0	285.1	151.0	436.1	343.7	2,720.8
Total, North								
	6,020.6	2,058.8	8,079.4	1,284.5	519.8	1,804.3	1,756.0	11,639.7
1/Less than 0.05 million green tons.								

1/Less than 0.05 million green tons.

Table 3.--Total green weight of aboveground tree biomass on commercial forest land in the South by class of timber, species group, section, and State
(Million green tons)

3-1

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
South Atlantic:								
North Carolina								
Softwoods	379.2	71.1	450.3	5.2	5.0	10.2	49.7	510.2
Hardwoods	556.2	131.6	687.8	101.1	35.8	136.9	183.7	1,008.4
Total	935.4	202.7	1,138.1	106.3	40.8	147.1	233.4	1,518.6
South Carolina								
Softwoods	328.8	61.1	389.9	9.1	2.4	11.5	31.8	433.2
Hardwoods	314.5	76.4	390.9	72.5	23.5	96.0	93.9	580.8
Total	643.3	137.5	780.8	81.6	25.9	107.5	125.7	1,014.0
Virginia								
Softwoods	202.1	39.5	241.6	7.0	2.1	9.1	37.0	287.7
Hardwoods	561.4	134.4	695.8	129.6	43.8	173.4	150.0	1,019.2
Total	763.5	173.9	937.4	136.6	45.9	182.5	187.0	1,306.9
Total, South Atlantic								
Softwoods	910.1	171.7	1,081.8	21.3	9.5	30.8	118.5	1,231.1
Hardwoods	1,432.1	342.4	1,774.5	303.2	103.1	406.3	427.6	2,608.4
Total	2,342.2	514.1	2,856.3	324.5	112.6	437.1	546.1	3,839.5
East Gulf:								
Florida								
Softwoods	320.5	74.3	394.8	5.1	2.1	7.2	59.5	461.5
Hardwoods	179.8	45.3	225.1	87.8	22.8	110.6	66.8	402.5
Total	500.3	119.6	619.9	92.9	24.9	117.8	126.3	864.0
Georgia								
Softwoods	546.2	109.8	656.0	8.1	2.6	10.7	96.1	762.8
Hardwoods	399.0	100.1	499.1	92.9	32.2	125.1	167.6	791.8
Total	945.2	209.9	1,155.1	101.0	34.8	135.8	263.7	1,554.6
Total, East Gulf								
Softwoods	866.7	184.1	1,050.8	13.2	4.7	17.9	155.6	1,224.3
Hardwoods	578.8	145.4	724.2	180.7	55.0	235.7	234.4	1,194.3
Total	1,445.5	329.5	1,775.0	193.9	59.7	253.6	390.0	2,418.6

Table 3.--Total green weight of aboveground tree biomass on commercial forest land in the South by class of timber, species group, section, and State (continued) 3-2

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Central Gulf:								
Alabama								
Softwoods	484.5	89.6	574.1	13.9	2.6	16.5	215.9	806.5
Hardwoods	377.9	79.3	457.2	156.9	34.5	191.4	251.2	899.8
Total	862.4	168.9	1,031.3	170.8	37.1	207.9	467.1	1,706.3
Mississippi								
Softwoods	374.2	68.2	442.4	10.5	1.9	12.4	105.1	559.9
Hardwoods	364.9	70.0	434.9	153.5	30.4	183.9	194.0	812.8
Total	739.1	138.2	877.3	164.0	32.3	196.3	299.1	1,372.7
Tennessee								
Softwoods	92.6	14.3	106.9	2.8	0.4	3.2	74.3	184.4
Hardwoods	375.8	74.0	449.8	155.5	31.9	187.4	211.6	848.8
Total	468.4	88.3	556.7	158.3	32.3	190.6	285.9	1,033.2
Total, Central Gulf								
Softwoods	951.3	172.1	1,123.4	27.2	4.9	32.1	395.3	1,550.8
Hardwoods	1,118.6	223.3	1,341.9	465.9	96.8	562.7	656.8	2,561.4
Total	2,069.9	395.4	2,465.3	493.1	101.7	594.8	1,052.1	4,112.2
West Gulf:								
Arkansas								
Softwoods	345.5	59.1	404.6	9.6	1.7	11.3	100.1	516.0
Hardwoods	418.2	84.1	502.3	175.5	36.6	212.1	243.2	957.6
Total	763.7	143.2	906.9	185.1	38.3	223.4	343.3	1,473.6
Louisiana								
Softwoods	375.5	71.0	446.5	10.4	2.0	12.4	80.6	539.5
Hardwoods	340.6	59.7	400.3	144.8	25.8	170.6	137.8	708.7
Total	716.1	130.7	846.8	155.2	27.8	183.0	218.4	1,248.2
Oklahoma								
Softwoods	57.5	8.6	66.1	1.7	0.2	1.9	29.7	97.7
Hardwoods	59.6	13.5	73.1	24.8	6.0	30.8	49.2	153.1
Total	117.1	22.1	139.2	26.5	6.2	32.7	78.9	250.8
Texas								
Softwoods	344.9	61.9	406.8	9.5	1.7	11.2	76.5	494.5
Hardwoods	228.5	44.6	273.1	96.1	19.3	115.4	122.1	510.6
Total	573.4	106.5	679.9	105.6	21.0	126.6	198.6	1,005.1
Total, West Gulf								
Softwoods	1,123.4	200.6	1,324.0	31.2	5.6	36.8	286.9	1,647.7
Hardwoods	1,046.9	201.9	1,248.8	441.2	87.7	528.9	552.3	2,330.0
Total	2,170.3	402.5	2,572.8	472.4	93.3	565.7	839.2	3,977.7
Total, South								
	8,027.9	1,641.5	9,669.4	1,483.9	367.3	1,851.2	2,827.4	14,348.0

Table 4.--Total green weight of aboveground tree biomass on commercial forest land in the West by class of timber, species group, section, and State
(Million green tons)

4-1

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Pacific Northwest:								
Oregon								
Softwoods	1,770.6	199.3	1,969.9	54.7	11.6	66.3	131.1	2,167.3
Hardwoods	142.8	26.3	169.1	33.9	10.6	44.5	61.1	274.7
Total	1,913.4	225.6	2,139.0	88.6	22.2	110.8	192.2	2,442.0
Washington								
Softwoods	1,369.7	141.4	1,511.1	27.8	5.9	33.7	75.6	1,620.4
Hardwoods	156.2	29.0	185.2	10.9	3.5	14.4	20.8	220.4
Total	1,525.9	170.4	1,696.3	38.7	9.4	48.1	96.4	1,840.8
Total, Pacific Northwest								
Softwoods	3,140.3	340.7	3,481.0	82.5	17.5	100.0	206.7	3,787.7
Hardwoods	299.0	55.3	354.3	44.8	14.1	58.9	81.9	495.1
Total	3,439.3	396.0	3,835.3	127.3	31.6	158.9	288.6	4,282.8
Coastal Alaska								
Softwoods	880.9	279.1	1,160.0	39.2	12.4	51.6	21.1	1,232.7
Hardwoods	6.1	2.4	8.5	0.2	0.1	0.3	0.5	9.3
Total	887.0	281.5	1,168.5	39.4	12.5	51.9	21.6	1,242.0
Interior Alaska								
Softwoods	66.9	23.1	90.0	0.6	0.2	0.8	6.2	97.0
Hardwoods	57.9	36.4	94.3	2.4	1.5	3.9	30.8	129.0
Total	124.8	59.5	184.3	3.0	1.7	4.7	37.0	226.0
Pacific Southwest:								
California ^{1/}								
Softwoods	1,051.5	90.2	1,141.6	20.6	3.6	24.2	50.5	1,216.3
Hardwoods	122.7	24.2	147.0	28.0	8.9	36.9	31.1	215.0
Total	1,174.2	114.4	1,288.6	48.6	12.5	61.1	81.6	1,431.3

^{1/} Includes Hawaii

Table 4.--Total green weight of aboveground tree biomass on commercial forest land in the West by class of timber, species group, section, and State (Million green tons) (continued) 4-2

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Northern Rocky Mtn.:								
Idaho								
Softwoods	573.0	166.1	739.1	14.4	8.5	22.9	51.2	813.2
Hardwoods	3.7	0.9	4.6	1.2	0.4	1.6	0.7	6.9
Total	576.7	167.0	743.7	15.6	8.9	24.5	51.9	820.1
Montana								
Softwoods	517.8	190.9	708.7	14.8	7.3	22.1	107.2	838.0
Hardwoods	4.4	1.7	6.1	0.6	0.3	0.9	0.5	7.5
Total	522.2	192.6	714.8	15.4	7.6	23.0	107.7	845.5
South Dakota (West)								
Softwoods	28.8	12.5	41.3	0.3	0.2	0.5	6.4	48.2
Hardwoods	0.3	0.1	0.4	0.3	0.1	0.4	0.2	1.0
Total	29.1	12.6	41.7	0.6	0.3	0.9	6.6	49.2
Wyoming								
Softwoods	119.5	45.9	165.4	5.9	4.7	10.6	26.0	202.0
Hardwoods	3.7	1.2	4.9	1.1	0.3	1.4	1.0	7.3
Total	123.2	47.1	170.3	7.0	5.0	12.0	27.0	209.3
Total, Northern Rocky Mtn.:								
Softwoods	1,239.1	415.4	1,654.5	35.4	20.7	56.1	190.8	1,901.4
Hardwoods	12.1	3.9	16.0	3.2	1.1	4.3	2.4	22.7
Total	1,251.2	419.3	1,670.5	38.6	21.8	60.4	193.2	1,924.1
Southern Rocky Mtn.:								
Arizona								
Softwoods	84.5	42.9	127.4	2.7	3.0	5.7	11.6	144.7
Hardwoods	3.6	1.1	4.7	2.5	1.7	4.2	0.6	9.5
Total	88.1	44.0	132.1	5.2	4.7	9.9	12.2	154.2
Colorado								
Softwoods	208.8	76.3	285.1	10.0	6.2	16.2	31.8	333.1
Hardwoods	39.3	10.5	49.8	15.0	4.7	19.7	9.7	79.2
Total	248.1	86.8	334.9	25.0	10.9	35.9	41.5	412.3
Nevada								
Softwoods	4.3	1.6	5.9	0.2	0.1	0.3	0.2	6.4
Hardwoods	0.2	0.1	0.3	0.2	2/0.1	0.2	2/0.2	0.5
Total	4.5	1.7	6.2	.4	0.1	0.5	0.2	6.9
New Mexico								
Softwoods	103.2	44.3	147.5	4.9	4.1	9.0	16.9	173.4
Hardwoods	9.8	2.5	12.3	3.8	1.2	5.0	1.9	19.2
Total	113.0	46.8	159.8	8.7	5.3	14.0	18.8	192.6
Utah								
Softwoods	61.0	24.4	85.4	1.9	2.4	4.3	10.5	100.2
Hardwoods	14.4	3.9	18.3	5.0	2.5	7.5	3.7	29.5
Total	75.4	28.3	103.7	6.9	4.9	11.8	14.2	129.7
Total, Southern Rocky Mtn.:								
Softwoods	461.8	189.5	651.3	19.7	15.8	35.5	71.0	757.8
Hardwoods	67.3	18.1	85.4	26.5	10.1	36.6	15.9	137.9
Total	529.1	207.6	736.7	46.2	25.9	72.1	86.9	895.7
Total, West								
	7,405.6	1,478.3	8,883.9	303.1	106.0	409.1	708.9	10,001.9

2/Less than 0.05 million green tons.

Table 5.--Per acre green weight of aboveground tree biomass on commercial forest land
in the North by class of timber, species group, section, and State
(Green tons)

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
New England:								
Connecticut								
Softwoods	6.4	2.2	8.6	0.6	0.2	0.8	0.9	10.3
Hardwoods	28.6	7.3	35.9	2.7	0.7	3.4	6.0	45.3
Total	35.0	9.5	44.5	3.3	0.9	4.2	6.9	55.6
Maine								
Softwoods	25.9	10.4	36.3	4.4	1.6	6.0	7.9	50.2
Hardwoods	14.7	4.3	19.0	6.1	1.8	7.9	7.0	33.9
Total	40.6	14.7	55.3	10.5	3.4	13.9	14.9	84.1
Massachusetts								
Softwoods	15.6	5.5	21.1	1.6	0.6	2.2	1.9	25.2
Hardwoods	20.5	5.3	25.8	4.1	1.0	5.1	6.5	37.4
Total	36.1	10.8	46.9	5.7	1.6	7.3	8.4	62.6
New Hampshire								
Softwoods	20.3	7.4	27.7	2.4	0.9	3.3	4.7	35.7
Hardwoods	20.6	5.8	26.4	7.2	2.0	9.2	8.5	44.1
Total	40.9	13.2	54.1	9.6	2.9	12.5	13.2	79.8
Rhode Island								
Softwoods	6.3	2.3	8.6	3.6	1.5	5.1	1.5	15.2
Hardwoods	19.7	5.1	24.8	4.8	1.3	6.1	5.8	36.7
Total	26.0	7.4	33.4	8.4	2.8	11.2	7.3	51.9
Vermont								
Softwoods	13.4	4.5	17.9	2.9	1.1	4.0	3.2	25.1
Hardwoods	25.9	6.9	32.8	14.3	3.8	18.1	6.6	57.5
Total	39.3	11.4	50.7	17.2	4.9	22.1	9.8	82.6
Total, New England								
Softwoods	20.9	8.1	29.0	3.4	1.2	4.6	5.7	39.3
Hardwoods	18.6	5.2	23.8	7.1	1.9	9.0	7.1	39.9
Total	39.5	13.3	52.8	10.5	3.1	13.6	12.8	79.2

Table 5.--Per acre green weight of aboveground tree biomass on commercial forest land
in the North by class of timber, species group, section, and State
(Green tons) (continued) 5 - 2

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Middle Atlantic:								
Delaware								
Softwoods	14.6	2.6	17.2	0.2	1/	0.2	1.6	19.0
Hardwoods	52.8	12.8	65.6	5.7	1.3	7.0	13.8	86.4
Total	67.4	15.4	82.8	5.9	1.3	7.2	15.4	105.4
Maryland								
Softwoods	13.4	2.8	16.2	1.5	0.6	2.1	1.4	19.7
Hardwoods	48.5	13.4	61.9	17.2	4.4	21.6	8.5	92.0
Total	61.9	16.2	78.1	18.7	5.0	23.7	9.9	111.7
New Jersey								
Softwoods	5.4	2.2	7.6	0.6	0.3	0.9	2.2	10.7
Hardwoods	33.8	8.1	41.9	4.3	1.0	5.3	10.8	58.0
Total	39.2	10.3	49.5	4.9	1.3	6.2	13.0	68.7
New York								
Softwoods	6.9	2.6	9.5	2.1	0.7	2.8	1.9	14.2
Hardwoods	22.5	6.5	29.0	11.4	3.1	14.5	11.3	54.8
Total	29.4	9.1	38.5	13.5	3.8	17.3	13.2	69.0
Pennsylvania								
Softwoods	4.2	1.3	5.5	0.4	0.1	0.5	0.9	6.9
Hardwoods	53.1	15.6	68.7	4.9	2.0	6.9	11.5	87.1
Total	57.3	16.9	74.2	5.3	2.1	7.4	12.4	94.0
West Virginia								
Softwoods	2.5	0.9	3.4	0.3	0.1	0.4	0.5	4.3
Hardwoods	48.2	11.6	59.8	15.0	3.6	18.6	13.2	91.6
Total	50.7	12.5	63.2	15.3	3.7	19.0	13.7	95.9
Total, Middle Atlantic								
Softwoods	5.2	1.7	6.9	1.0	0.3	1.3	1.2	9.4
Hardwoods	41.4	11.4	52.8	10.0	2.9	12.9	11.6	77.3
Total	46.6	13.1	59.7	11.0	3.2	14.2	12.8	86.7

1/Less than 0.05 green tons.

Table 5.--Per acre green weight of aboveground tree biomass on commercial forest land
in the North by class of timber, species group, section, and State
(Green tons) (continued) 5 - 3

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Lake States:								
Michigan								
Softwoods	6.7	3.3	10.0	0.3	0.3	0.6	2.9	13.5
Hardwoods	20.8	9.5	30.3	2.5	1.9	4.4	6.7	41.4
Total	27.5	12.8	40.3	2.8	2.2	5.0	9.6	54.9
Minnesota								
Softwoods	5.9	2.8	8.7	0.4	0.2	0.6	4.1	13.4
Hardwoods	16.3	7.9	24.2	2.9	2.1	5.0	5.8	35.0
Total	22.2	10.7	32.9	3.3	2.3	5.6	9.9	48.4
North Dakota								
Softwoods	0.3	1/	0.3	1/	1/	1/	1/	0.3
Hardwoods	17.5	8.1	25.6	7.9	4.6	12.5	7.9	46.0
Total	17.8	8.1	25.9	7.9	4.6	12.5	7.9	46.3
South Dakota (East)								
Softwoods	4.5	2.2	6.7	0.5	0.4	0.9	0.9	8.5
Hardwoods	17.5	8.5	26.0	8.5	6.8	15.3	2.2	43.5
Total	22.0	10.7	32.7	9.0	7.2	16.2	3.1	52.0
Wisconsin								
Softwoods	5.7	2.7	8.4	0.2	0.3	0.5	1.8	10.7
Hardwoods	17.7	8.0	25.7	3.8	2.9	6.7	4.8	37.2
Total	23.4	10.7	34.1	4.0	3.2	7.2	6.6	47.9
Total, Lake States								
Softwoods	6.1	2.9	9.0	0.3	0.3	0.6	2.9	12.5
Hardwoods	18.5	8.5	27.0	3.1	2.3	5.4	5.9	38.3
Total	24.6	11.4	36.0	3.4	2.6	6.0	8.8	50.8

1/Less than 0.05 green tons.

Table 5.--Per acre green weight of aboveground tree biomass on commercial forest land in the North by class of timber, species group, section, and State (Green tons) (continued) 5 - 4

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Central States:								
Illinois								
Softwoods	0.3	0.1	0.4	1/	1/	1/	0.1	0.5
Hardwoods	24.4	11.1	35.5	2.9	2.3	5.2	4.1	44.8
Total	24.7	11.2	35.9	2.9	2.3	5.2	4.2	45.3
Indiana								
Softwoods	0.6	0.3	0.9	1/	1/	1/	0.3	1.2
Hardwoods	28.9	13.3	42.2	3.6	2.8	6.4	6.8	55.4
Total	29.5	13.6	43.1	3.6	2.8	6.4	7.1	56.6
Iowa								
Softwoods	0.1	0.1	0.2	0.1	0.1	0.2	1/	0.4
Hardwoods	23.3	10.7	34.0	6.4	5.1	11.5	6.1	51.6
Total	23.4	10.8	34.2	6.5	5.2	11.7	6.1	52.0
Kansas								
Softwoods	1/	1/	1/	0.1	1/	0.1	1/	0.1
Hardwoods	15.0	7.0	22.0	12.5	9.8	22.3	4.7	49.0
Total	15.0	7.0	22.0	12.6	9.8	22.4	4.7	49.1
Kentucky								
Softwoods	3.5	1.6	5.1	0.6	0.3	0.9	0.8	6.8
Hardwoods	49.7	12.0	61.7	7.8	1.9	9.7	6.8	78.2
Total	53.2	13.6	66.8	8.4	2.2	10.6	7.6	85.0
Missouri								
Softwoods	1.0	0.5	1.5	0.1	1/	0.1	0.5	2.1
Hardwoods	17.6	7.8	25.4	7.0	5.4	12.4	8.1	45.9
Total	18.6	8.3	26.9	7.1	5.4	12.5	8.6	48.0
Nebraska								
Softwoods	7.5	3.9	11.4	0.4	0.4	0.8	0.9	13.1
Hardwoods	15.0	7.2	22.2	7.3	5.7	13.0	0.8	36.0
Total	22.5	11.1	33.6	7.7	6.1	13.8	1.7	49.1
Ohio								
Softwoods	1.2	0.6	1.8	0.1	1/	0.1	0.3	2.2
Hardwoods	44.8	13.8	58.6	5.9	2.2	8.1	12.5	79.2
Total	46.0	14.4	60.4	6.0	2.2	8.2	12.8	81.4
Total, Central States								
Softwoods	1.7	0.8	2.5	0.2	0.1	0.3	0.5	3.3
Hardwoods	32.9	10.8	43.7	6.5	3.5	10.0	7.7	61.4
Total	34.6	11.6	46.2	6.7	3.6	10.3	8.2	64.7
Total, North								
	36.0	12.3	48.3	7.7	3.1	10.8	10.5	69.6
1/Less than 0.05 green tons.								

1/Less than 0.05 green tons.

Table 6.--Per acre green weight of aboveground tree biomass on commercial forest land
in the South by class of timber, species group, section, and State
(Green tons)

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
South Atlantic:								
North Carolina								
Softwoods	19.4	3.6	23.0	0.3	0.3	0.6	2.5	26.1
Hardwoods	28.5	6.7	35.2	5.2	1.8	7.0	9.4	51.6
Total	47.9	10.3	58.2	5.5	2.1	7.6	11.9	77.7
South Carolina								
Softwoods	26.3	4.9	31.2	0.7	0.2	0.9	2.5	34.6
Hardwoods	25.2	6.1	31.3	5.8	1.9	7.7	7.5	46.5
Total	51.5	11.0	62.5	6.5	2.1	8.6	10.0	81.1
Virginia								
Softwoods	12.6	2.5	15.1	0.5	0.1	0.6	2.3	18.0
Hardwoods	35.2	8.4	43.6	8.1	2.7	10.8	9.4	63.8
Total	47.8	10.9	58.7	8.6	2.8	11.4	11.7	81.8
Total, South Atlantic								
Softwoods	18.9	3.6	22.5	0.4	0.2	0.6	2.5	25.6
Hardwoods	29.8	7.1	36.9	6.3	2.2	8.5	8.9	54.3
Total	48.7	10.7	59.4	6.7	2.4	9.1	11.4	79.9
East Gulf:								
Florida								
Softwoods	20.5	4.7	25.2	0.3	0.1	0.4	3.8	29.4
Hardwoods	11.5	2.9	14.4	5.6	1.5	7.1	4.3	25.8
Total	32.0	7.6	39.6	5.9	1.6	7.5	8.1	55.2
Georgia								
Softwoods	22.0	4.4	26.4	0.3	0.1	0.4	3.9	30.7
Hardwoods	16.1	4.0	20.1	3.7	1.3	5.0	6.8	31.9
Total	38.1	8.4	46.5	4.0	1.4	5.4	10.7	62.6
Total, East Gulf								
Softwoods	21.4	4.5	25.9	.3	0.2	0.5	3.8	30.2
Hardwoods	14.3	3.6	17.9	4.5	1.3	5.8	5.8	29.5
Total	35.7	8.1	43.8	4.8	1.5	6.3	9.6	59.7

Table 6.--Per acre green weight of aboveground tree biomass on commercial forest land in the South by class of timber, species group, section, and State (Green tons)

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Central Gulf:								
Alabama								
Softwoods	22.7	4.2	26.9	0.7	0.1	0.8	10.1	37.8
Hardwoods	17.7	3.7	21.4	7.4	1.6	9.0	11.8	42.2
Total	40.4	7.9	48.3	8.1	1.7	9.8	21.9	80.0
Mississippi								
Softwoods	22.7	4.1	26.8	0.6	0.1	0.7	6.4	33.9
Hardwoods	22.1	4.3	26.4	9.3	1.8	11.1	11.7	49.2
Total	44.8	8.4	53.2	9.9	1.9	11.8	18.1	83.1
Tennessee								
Softwoods	7.2	1.1	8.3	0.2	1/	0.2	5.8	14.3
Hardwoods	29.3	5.8	35.1	12.1	2.5	14.6	16.5	66.2
Total	36.5	6.9	43.4	12.3	2.5	14.8	22.3	80.5
Total, Central Gulf								
Softwoods	18.8	3.4	22.2	0.5	0.1	0.6	7.8	30.6
Hardwoods	22.1	4.4	26.5	9.2	1.9	11.1	13.0	50.6
Total	40.9	7.8	48.7	9.7	2.0	11.7	20.8	81.2
West Gulf:								
Arkansas								
Softwoods	20.8	3.6	24.4	0.6	0.1	0.7	6.0	31.1
Hardwoods	25.2	5.0	30.2	10.6	2.2	12.8	14.6	57.6
Total	46.0	8.6	54.6	11.2	2.3	13.5	20.6	88.7
Louisiana								
Softwoods	25.8	4.9	30.7	0.7	0.1	0.8	5.6	37.1
Hardwoods	23.5	4.1	27.6	10.0	1.7	11.7	9.5	48.8
Total	49.3	9.0	58.3	10.7	1.8	12.5	15.1	85.9
Oklahoma								
Softwoods	13.3	2.0	15.3	0.4	1/	0.4	6.9	22.6
Hardwoods	13.8	3.1	16.9	5.7	1.4	7.1	11.4	35.4
Total	27.1	5.1	32.2	6.1	1.4	7.5	18.3	58.0
Texas								
Softwoods	27.6	4.9	32.5	0.8	0.1	0.9	6.1	39.5
Hardwoods	18.2	3.6	21.8	7.7	1.5	9.2	9.8	40.8
Total	45.8	8.5	54.3	8.5	1.6	10.1	15.9	80.3
Total, West Gulf								
Softwoods	23.4	4.2	27.6	0.7	0.1	0.8	6.0	34.4
Hardwoods	21.8	4.2	26.0	9.2	1.8	11.0	11.5	48.5
Total	45.2	8.4	53.6	9.9	1.9	11.8	17.5	82.9
Total, South								
	42.9	8.8	51.7	7.9	2.0	9.9	15.1	76.7
1/Less than 0.05 green tons.								

1/Less than 0.05 green tons.

Table 7.--Per acre green weight of aboveground tree biomass on commercial forest land
in the West by class of timber, species group, section, and State
(Green tons)

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Pacific Northwest:								
Oregon								
Softwoods	73.2	8.2	81.4	2.2	0.5	2.7	5.4	89.5
Hardwoods	5.9	1.1	7.0	1.4	0.4	1.8	2.5	11.3
Total	79.1	9.3	88.4	3.6	0.9	4.5	7.9	100.8
Washington								
Softwoods	76.4	7.9	84.3	1.6	0.3	1.9	4.2	90.4
Hardwoods	8.7	1.6	10.3	0.6	0.2	0.8	1.2	12.3
Total	85.1	9.5	94.6	2.2	0.5	2.7	5.4	102.7
Total, Pacific Northwest								
Softwoods	74.5	8.1	82.6	2.0	0.4	2.4	4.9	89.9
Hardwoods	7.1	1.3	8.4	1.1	0.3	1.4	1.9	11.7
Total	81.6	9.4	91.0	3.1	0.7	3.8	6.8	101.6
Coastal Alaska								
Softwoods	125.1	39.7	164.8	5.6	1.7	7.3	3.0	175.1
Hardwoods	0.9	0.3	1.2	<u>1/</u>	<u>1/</u>	<u>1/</u>	0.1	1.3
Total	126.0	40.0	166.0	5.6	1.7	7.3	3.1	176.4
Interior Alaska								
Softwoods	16.3	5.6	21.9	0.1	0.1	0.2	1.5	23.6
Hardwoods	14.1	8.8	22.9	0.6	0.4	1.0	7.5	31.4
Total	30.4	14.4	44.8	0.7	0.5	1.2	9.0	55.0
Pacific Southwest:								
California ^{2/}								
Softwoods	61.0	5.2	66.2	1.2	0.2	1.4	2.9	70.5
Hardwoods	7.1	1.4	8.5	1.6	0.5	2.1	1.8	12.4
Total	68.1	6.6	74.7	2.8	0.7	3.5	4.7	82.9

^{1/}Less than 0.05 green tons.

^{2/}Includes Hawaii.

Table 7.--Per acre green weight of aboveground tree biomass on commercial forest land
in the West by class of timber, species group, section, and State
(Green tons) (continued) 7 -2

Section, region, and species group	Growing stock			Rough and rotten			Small trees	Total biomass
	Merchantable stem	Tops and branches	Total	Merchantable stem	Tops and branches	Total		
Northern Rocky Mtn.:								
Idaho								
Softwoods	42.3	12.3	54.6	1.1	0.6	1.7	3.8	60.1
Hardwoods	0.2	0.1	0.3	0.1	1/	0.1	0.1	0.5
Total	42.5	12.4	54.9	1.2	0.6	1.8	3.9	60.6
Montana								
Softwoods	36.1	13.3	49.4	1.0	0.5	1.5	7.5	58.4
Hardwoods	0.3	0.1	0.4	0.1	1/	0.1	1/	0.5
Total	36.4	13.4	49.8	1.1	0.5	1.6	7.5	58.9
South Dakota (West)								
Softwoods	23.1	10.1	33.2	0.2	0.2	0.4	5.1	38.7
Hardwoods	0.2	0.1	0.3	0.2	0.1	0.3	0.2	0.8
Total	23.3	10.2	33.5	0.4	0.3	0.7	5.3	39.5
Wyoming								
Softwoods	27.6	10.6	38.2	1.3	1.1	2.4	6.0	46.6
Hardwoods	0.8	0.3	1.1	0.2	0.1	0.3	0.2	1.6
Total	28.4	10.9	39.3	1.5	1.2	2.7	6.2	48.2
Total, Northern Rocky Mtn.								
Softwoods	37.0	12.4	49.4	1.1	0.6	1.7	5.7	56.8
Hardwoods	0.4	0.1	0.5	0.1	1/	0.1	0.1	0.7
Total	37.4	12.5	49.9	1.2	0.6	1.8	5.8	57.5
Southern Rocky Mtn.:								
Arizona								
Softwoods	21.7	11.0	32.7	0.7	0.8	1.5	3.0	37.2
Hardwoods	0.9	0.3	1.2	0.6	0.4	1.0	0.2	2.4
Total	22.6	11.3	33.9	1.3	1.2	2.5	3.2	39.6
Colorado								
Softwoods	18.5	6.7	25.2	0.9	0.5	1.4	2.8	29.4
Hardwoods	3.5	0.9	4.4	1.3	0.4	1.7	0.9	7.0
Total	22.0	7.6	29.6	2.2	0.9	3.1	3.7	36.4
Nevada								
Softwoods	32.0	11.9	43.9	1.5	0.7	2.2	1.5	47.6
Hardwoods	1.5	0.7	2.2	1.5	1/	1.5	1/	3.7
Total	33.5	12.6	46.1	3.0	0.7	3.7	1.5	51.3
New Mexico								
Softwoods	18.6	8.0	26.6	0.9	0.7	1.6	3.1	31.3
Hardwoods	1.8	0.5	2.3	0.7	0.2	0.9	0.3	3.5
Total	20.4	8.5	28.9	1.6	0.9	2.5	3.4	34.8
Utah								
Softwoods	17.9	7.2	25.1	0.5	0.7	1.2	3.1	29.4
Hardwoods	4.2	1.2	5.4	1.5	0.7	2.2	1.1	8.7
Total	22.1	8.4	30.5	2.0	1.4	3.4	4.2	38.1
Total, Southern Rocky Mtn.								
Softwoods	19.0	7.8	26.8	0.8	0.7	1.5	2.9	31.2
Hardwoods	2.8	0.7	3.5	1.1	0.4	1.5	0.7	5.7
Total	21.8	8.5	30.3	1.9	1.1	3.0	3.6	36.9
Total, West								
	57.7	11.5	69.2	2.4	0.8	3.2	5.5	77.9
1/Less than 0.05 green tons.								

1/Less than 0.05 green tons.

Table 8.--Total green weight of aboveground softwood tree biomass on commercial forest land
in the eastern United States by species, diameter class, section, and region
(Million green tons)

Section, region and diameter class	Longleaf and slash pine	Shortleaf and loblolly	Other yellow pines	Eastern white and red pines	Spruce and balsam fir	Eastern hemlock	Other softwoods	Total softwoods
New England								
1.0 to 5.0	-	-	0.6	20.1	130.7	14.2	12.3	177.9
5.0 to 9.0	-	-	1.4	50.5	327.7	35.6	30.9	446.1
9.0 to 19.0	-	-	3.6	143.4	263.9	81.7	43.0	535.6
19.0 to 29.0	-	-	-	39.0	6.7	9.3	1.2	56.2
29.0+	-	-	-	5.1	0.1	0.5	0.1	5.8
Total	-	-	5.6	258.1	729.1	141.3	87.5	1,221.6
Middle Atlantic								
1.0 to 5.0	-	2.4	9.0	16.8	8.0	16.8	2.8	55.8
5.0 to 9.0	-	5.7	20.9	39.1	18.5	39.0	6.4	129.6
9.0 to 19.0	-	26.5	40.8	58.7	24.3	66.6	5.5	222.4
19.0 to 29.0	-	1.6	0.5	15.6	2.1	11.2	0.7	31.7
29.0+	-	0.1	-	2.1	-	0.3	0.2	2.7
Total	-	36.3	71.2	132.3	52.9	133.9	15.6	442.2
Lake States								
1.0 to 5.0	-	-	0.2	39.9	70.1	1.5	25.6	137.3
5.0 to 9.0	-	-	0.9	76.9	95.5	5.9	46.2	225.4
9.0 to 19.0	-	-	0.8	81.9	43.2	35.7	37.2	198.8
19.0 to 29.0	-	-	1/	16.6	0.9	10.5	2.2	30.2
29.0+	-	-	-	1.2	1/	0.4	1/	1.6
Total	-	-	1.9	216.5	209.7	54.0	111.2	593.3
Central States								
1.0 to 5.0	-	4.5	2.6	3.8	1.8	3.8	4.4	20.9
5.0 to 9.0	-	10.3	8.0	10.7	5.1	10.6	5.9	50.6
9.0 to 19.0	-	15.0	15.2	12.3	5.1	13.9	4.5	66.0
19.0 to 29.0	-	0.2	0.3	1.0	0.1	0.5	0.3	2.4
29.0+	-	-	-	0.1	-	-	0.1	0.2
Total	-	30.0	26.1	27.9	12.1	28.8	15.2	140.1
Total North	-	66.3	104.8	634.8	1,003.8	358.0	229.5	2,397.2

1/ Less than 0.05 million green tons.

Table 8.--Total green weight of aboveground softwood tree biomass on commercial forest land
in the eastern United States by species, diameter class, section, and region
(Million green tons) (continued) 8 - 2

Section, region and diameter class	Longleaf and slash pine	Shortleaf and loblolly	Other yellow pines	Eastern white and red pines	Spruce and balsam fir	Eastern hemlock	Other softwoods	Total softwoods
South Atlantic								
1.0 to 5.0	7.6	54.9	43.6	1.9	-	-	10.5	118.5
5.0 to 9.0	29.0	207.2	112.5	6.6	-	-	15.9	371.2
9.0 to 19.0	50.1	439.3	121.8	19.7	-	-	37.0	667.9
19.0 to 29.0	1.4	44.0	3.5	5.0	-	-	13.7	67.6
29.0+	-	1.4	-	0.9	-	-	3.6	5.9
Total	88.1	746.8	281.4	34.1	-	-	80.7	1,231.1
East Gulf								
1.0 to 5.0	81.5	44.2	12.9	0.2	-	-	16.8	155.6
5.0 to 9.0	199.4	132.7	26.7	0.8	-	-	41.7	401.3
9.0 to 19.0	262.6	235.4	32.9	3.3	-	-	86.7	620.9
19.0 to 29.0	9.5	18.0	1.7	1.8	-	-	11.6	42.6
29.0+	0.2	0.5	0.1	0.1	-	-	3.0	3.9
Total	553.2	430.8	74.3	6.2	-	-	159.8	1,224.3
Central Gulf								
1.0 to 5.0	41.3	262.2	-	-	-	-	91.9	395.4
5.0 to 9.0	79.9	467.3	-	-	-	-	77.1	624.3
9.0 to 19.0	70.4	358.4	-	-	-	-	38.1	466.9
19.0 to 29.0	3.4	52.0	-	-	-	-	8.8	64.2
29.0+	-	-	-	-	-	-	-	-
Total	195.0	1,139.9	-	-	-	-	215.9	1,550.8
West Gulf								
1.0 to 5.0	19.2	241.9	-	-	-	-	25.7	286.8
5.0 to 9.0	39.9	515.8	-	-	-	-	26.2	581.9
9.0 to 19.0	28.4	583.2	-	-	-	-	40.6	652.2
19.0 to 29.0	2.2	108.3	-	-	-	-	16.3	126.8
29.0+	-	-	-	-	-	-	-	-
Total	89.7	1,449.2	-	-	-	-	108.8	1,647.7
Total South	926.0	3,766.7	355.7	40.3	-	-	565.2	5,653.9

Table 9.--Total green weight of aboveground hardwood tree biomass on commercial forest land
in the eastern United States by species, diameter class, section, and region
(Million green tons)

Section, region and diameter class	Red oaks	White oaks	Hickory	Birch beech	Black and sweet gum	Cottonwood and aspen	Yellow poplar	Hard maple	Soft maple	Other hardwoods	Total all hardwoods
New England											
1.0 to 5.0	24.4	6.4	2.4	32.1	-	16.0	-	30.4	58.1	48.7	218.5
5.0 to 11.0	56.7	14.9	5.6	74.7	-	37.1	-	70.9	135.2	113.4	508.5
11.0 to 19.0	78.1	12.1	3.7	74.0	-	16.6	-	76.3	70.9	61.2	392.9
19.0 to 29.0	24.7	3.6	2.2	16.6	-	0.2	-	33.7	10.5	12.3	103.8
29.0+	3.5	0.5	-	1.1	-	-	-	3.0	1.6	1.7	11.4
Total	187.4	37.5	13.9	198.5	-	69.9	-	214.3	276.3	237.3	1,235.1
Middle Atlantic											
1.0 to 5.0	80.0	95.4	28.3	34.9	8.2	19.4	16.0	60.0	96.7	104.6	543.5
5.0 to 11.0	187.4	223.4	66.4	81.7	19.2	45.5	37.4	140.4	226.6	245.3	1,273.3
11.0 to 19.0	301.2	235.4	60.5	93.2	21.9	15.4	97.6	108.1	130.1	256.2	1,319.6
19.0 to 29.0	136.9	77.6	12.0	28.8	7.7	0.6	34.0	29.1	23.8	56.9	407.4
29.0+	22.8	15.9	1.0	3.0	0.2	0.1	4.9	4.4	2.6	7.0	61.9
Total	728.3	647.7	168.2	241.6	57.2	81.0	189.9	342.0	479.8	670.0	3,605.7
Lake States											
1.0 to 5.0	17.5	12.1	3.5	57.5	-	53.0	1/	42.4	35.5	57.5	279.0
5.0 to 11.0	93.3	40.0	9.5	148.6	-	205.8	0.1	99.0	70.4	191.0	857.7
11.0 to 19.0	100.5	43.9	4.6	55.4	-	110.7	0.2	86.3	36.6	113.9	552.1
19.0 to 29.0	31.5	11.9	0.6	11.7	-	7.3	0.1	23.3	7.4	27.7	121.5
29.0+	2.0	1.3	-	0.7	-	0.9	-	0.9	1.1	3.8	10.7
Total	244.8	109.2	18.2	273.9	-	377.7	0.4	251.9	151.0	393.9	1,821.0
Central States											
1.0 to 5.0	49.3	63.3	50.2	11.3	2.5	7.1	6.2	22.0	32.7	78.1	322.7
5.0 to 11.0	167.6	203.9	93.8	33.6	7.3	22.5	17.3	63.7	94.4	185.7	889.8
11.0 to 19.0	248.1	229.4	59.4	44.5	9.4	16.9	46.3	57.9	66.7	186.3	964.9
19.0 to 29.0	114.5	74.2	10.4	19.4	4.4	12.7	20.7	19.8	18.5	57.9	352.5
29.0+	16.5	12.3	0.8	2.5	0.1	2.8	2.9	2.6	2.8	7.5	50.8
Total	596.0	583.1	214.6	111.3	23.7	62.0	93.4	166.0	215.1	515.5	2,580.7
Total North	1,756.5	1,377.5	414.9	825.3	80.9	590.6	283.7	974.2	1,122.2	1,816.7	9,242.5

1/Less than 0.05 million green tons.

Table 9.--Total green weight of aboveground hardwood tree biomass on commercial forest land
in the eastern United States by species, diameter class, section, and region
(Million green tons)

Section, region and diameter class	Red oaks	White oaks	Hickory	Birch beech	Black and sweet gum	Cottonwood and aspen	Yellow poplar	Hard maple	Soft maple	Other hardwoods	Total all hardwoods
South Atlantic											
1.0 to 5.0	79.6	22.2	20.2	-	72.5	-	16.8	-	66.6	149.7	427.6
5.0 to 11.0	267.5	94.5	53.3	-	150.5	-	66.5	-	91.7	158.0	882.0
11.0 to 19.0	312.9	119.9	63.4	-	175.8	-	107.8	-	63.1	123.0	965.9
19.0 to 29.0	95.9	48.9	14.8	-	46.9	-	27.1	-	15.9	36.8	286.3
29.0+	17.1	10.7	2.1	-	7.1	-	2.3	-	1.7	5.6	46.6
Total	773.0	296.2	153.8	-	452.8	-	220.5	-	239.0	473.1	2,608.4
East Gulf											
1.0 to 5.0	63.1	11.1	9.8	-	61.2	-	4.4	-	18.9	65.8	234.3
5.0 to 11.0	120.8	29.6	18.2	-	116.2	-	14.4	-	29.0	78.0	406.2
11.0 to 19.0	113.7	42.9	22.0	-	114.6	-	22.2	-	24.6	62.6	402.6
19.0 to 29.0	43.5	28.1	5.6	-	24.5	-	5.2	-	5.8	11.2	123.9
29.0+	9.4	12.0	0.4	-	3.1	-	0.8	-	0.5	1.1	27.3
Total	350.5	123.7	56.0	-	319.6	-	47.0	-	78.8	218.7	1,194.3
Central Gulf											
1.0 to 5.0	150.9	106.7	79.1	1/	137.9	-	21.2	-	30.7	130.3	656.8
5.0 to 11.0	239.3	261.9	126.2	1/	260.8	-	47.9	-	34.8	125.8	1,096.7
11.0 to 19.0	158.7	167.0	57.3	1/	104.9	-	36.8	-	11.7	67.4	603.8
19.0 to 29.0	69.1	47.6	16.0	1/	24.0	-	14.7	-	4.0	28.7	204.1
29.0+	-	-	-	-	-	-	-	-	-	-	-
Total	618.0	583.2	278.6	1/	527.6	-	120.6	-	81.2	352.2	2,561.4
West Gulf											
1.0 to 5.0	129.0	134.1	71.1	1/	112.1	-	0.3	-	15.4	90.3	552.3
5.0 to 11.0	218.1	272.3	97.4	1/	242.8	-	0.8	-	15.5	104.0	950.9
11.0 to 19.0	158.6	144.8	42.0	1/	148.2	-	0.8	-	3.7	81.7	579.8
19.0 to 29.0	87.2	59.5	18.2	1/	43.7	-	0.6	-	1.1	36.7	247.0
29.0+	-	-	-	-	-	-	-	-	-	-	-
Total	592.9	610.7	228.7	1/	546.8	-	2.5	-	35.7	312.7	2,330.0
Total South	2,334.4	1,613.8	717.1	1/	1,846.8	-	390.6	-	434.7	1,356.7	8,694.1

1/ Included in other hardwoods.

Table 10.--Total green weight of aboveground softwood tree biomass on commercial forest land
in the western United States by species, diameter class, section, and region
(Million green tons)

Section, region and diameter class	Douglas fir	Ponderosa, Jeffrey, sugar pine	True firs	Sitka, engelmann and other spruces	Redwood and western larch	Western hemlock	Western white pine	Western red cedar	Other cedars	Lodgepole pine	Other softwoods	Total all softwoods
PNW Douglas-Fir												
1.0 - 5.0	74.2	1.3	8.3	2.3	0.3	37.5	0.5	6.7	1.2	0.4	0.7	133.4
5.0 - 9.0	46.9	0.4	12.6	1.4	1/	40.5	0.3	5.4	0.5	1.3	0.8	110.1
9.0 - 19.0	398.3	5.9	94.5	7.7	0.4	300.2	4.4	27.8	3.3	6.2	3.6	852.3
19.0 - 29.0	329.9	8.0	81.5	5.6	0.6	209.2	4.8	22.0	3.2	0.3	2.7	667.8
29.0+	582.4	19.1	88.8	14.6	1.4	200.3	3.5	47.0	6.2	1/	3.4	966.7
Total	1,431.7	34.7	285.7	31.6	2.7	787.7	13.5	108.9	14.4	8.2	11.2	2,730.3
PNW Ponderosa Pine												
1.0 - 5.0	20.4	15.9	11.1	3.7	8.4	3.7	0.4	0.7	0.3	8.5	0.2	73.3
5.0 - 9.0	21.4	20.2	23.3	2.0	6.2	1.8	0.4	0.7	0.1	37.0	0.1	113.2
9.0 - 19.0	119.9	106.9	108.1	15.1	30.1	17.9	4.6	2.9	0.6	65.0	1.0	472.1
19.0 - 29.0	63.7	102.2	48.7	8.0	13.7	11.7	2.2	1.1	1.1	2.9	0.6	255.9
29.0+	37.3	69.9	20.9	2.3	5.0	5.0	0.8	0.9	0.5	0.1	0.2	142.9
Total	262.7	315.1	212.1	31.1	63.4	40.1	8.4	6.3	2.6	113.5	2.1	1,057.4
Alaska - Coastal												
1.0 - 5.0	-	-	1/	2.8	-	14.1	-	0.4	1.1	-	3.4	21.8
5.0 - 9.0	-	-	1/	11.3	-	45.1	-	1.3	5.0	0.1	12.0	74.8
9.0 - 19.0	-	-	0.1	79.0	-	191.0	-	11.5	30.7	0.5	46.5	359.3
19.0 - 29.0	-	-	1/	104.4	-	226.1	-	15.4	23.8	0.3	42.2	412.2
29.0+	-	-	1/	135.4	-	194.6	-	12.4	6.3	-	15.9	364.6
Total	-	-	0.1	332.9	-	670.9	-	41.0	66.9	0.9	120.0	1,232.7
Alaska - Interior												
1.0 - 5.0	-	-	-	6.2	-	-	-	-	-	-	-	6.2
5.0 - 9.0	-	-	-	27.6	-	-	-	-	-	-	-	27.6
9.0 - 19.0	-	-	-	60.8	-	-	-	-	-	-	-	60.8
19.0 - 29.0	-	-	-	2.2	-	-	-	-	-	-	-	2.2
29.0+	-	-	-	0.2	-	-	-	-	-	-	-	0.2
Total	-	-	-	97.0	-	-	-	-	-	-	-	97.0

1/ Less than 0.05 million green tons.

Table 10.--Total green weight of aboveground softwood tree biomass on commercial forest land
in the western United States by species, diameter class, section, and region

(continued)

10-2

(Million green tons)

Section, region and diameter class	Douglas fir	Ponderosa, Jeffrey, sugar pine	True firs	Sitka, engelmann and other spruces	Redwood and western larch	Western hemlock	Western white pine	Western red cedar	Other cedars	Lodgepole pine	Other softwoods	Total all softwoods
Pacific Southwest												
1.0 - 5.0	16.4	9.4	11.4	0.1	8.0	0.3	0.2	1/	3.4	0.8	0.5	50.5
9.0 - 11.0	9.2	0.5	11.3	-	1.0	1/	0.1	1/	2.9	0.8	0.3	32.1
9.0 - 19.0	73.6	70.3	106.1	0.4	19.8	1.4	1.2	1/	17.1	7.7	2.9	300.5
19.0 - 29.0	75.7	88.3	102.6	0.7	25.5	1.5	2.0	0.1	12.9	5.6	1.6	316.5
29.0+	175.3	138.8	134.5	0.2	43.1	1.1	2.2	0.2	16.1	2.7	2.5	516.7
Total	350.2	313.3	365.9	1.4	97.4	4.3	5.7	0.3	52.4	17.6	7.8	1,216.3
Northern Rocky Mtn.												
1.0 - 5.0	42.1	17.1	34.9	8.4	8.6	3.9	1.3	7.2	-	64.2	3.1	190.8
5.0 - 9.0	85.4	31.6	55.0	17.5	22.4	6.6	4.5	7.2	-	202.5	13.0	445.7
9.0 - 19.0	261.9	99.2	110.6	64.1	55.4	20.2	21.6	20.8	-	185.0	20.3	859.1
19.0 - 29.0	111.1	48.1	36.5	35.7	27.7	9.1	17.3	12.7	-	5.0	2.8	306.0
29.0+	27.2	29.7	11.4	7.5	8.2	2.5	5.5	7.4	-	0.1	0.3	99.8
Total	527.7	225.7	248.4	133.2	122.3	42.3	50.2	55.3	-	456.8	39.5	1,901.4
Southern Rocky Mtn.												
1.0 - 5.0	9.0	21.4	14.5	11.6	-	-	1/	-	-	12.6	1.9	71.0
5.0 - 9.0	21.7	31.9	27.9	28.1	-	-	1/	-	-	45.0	4.3	158.9
9.0 - 19.0	43.9	101.0	46.3	87.5	-	-	1/	-	-	49.3	7.9	335.9
19.0 - 29.0	20.4	88.8	12.0	34.1	-	-	0.1	-	-	2.2	2.9	160.5
29.0+	5.9	16.9	3.4	3.9	-	-	0.2	-	-	0.1	1.1	31.5
Total	100.9	260.0	104.1	165.2	-	-	0.3	-	-	109.2	18.1	757.8
Total West	2,673.2	1,148.8	1,216.3	792.4	285.8	1,545.3	78.1	211.8	136.3	706.2	198.7	8,992.9

1/Less than 0.05 million green tons.

Table 11.--Total green weight of aboveground hardwood tree biomass on commercial forest land in the western United States by species, diameter class, section, and region

(Million green tons)

Section, region and diameter class	Cottonwood and aspen	Red alder	Oak	Other hardwoods	Total all hardwoods
PNW Douglas-Fir					
1.0 - 5.0	1.2	41.8	5.8	26.7	75.5
5.0 - 11.0	0.3	74.2	5.4	30.1	110.0
11.0 - 19.0	3.5	162.8	11.3	57.1	234.7
19.0 - 29.0	2.6	26.7	2.6	19.6	51.5
29.0+	1.9	1.3	0.1	6.2	9.5
Total	9.5	306.8	25.2	139.7	481.2
PNW Ponderosa Pine					
1.0 - 5.0	4.0	0.2	0.1	2.1	6.4
5.0 - 11.0	0.7	0.2	0.1	1.3	2.3
11.0 - 19.0	2.7	0.1	0.2	0.8	3.8
19.0 - 29.0	0.9	0.1	-	0.1	1.1
29.0+	0.2	-	-	0.1	0.3
Total	8.5	0.6	0.4	4.4	13.9
Alaska - Coastal					
1.0 - 5.0	0.1	0.2	-	0.2	0.5
5.0 - 11.0	0.9	1.2	-	0.2	2.3
11.0 - 19.0	1.8	1.7	-	0.2	3.7
19.0 - 29.0	1.7	0.1	-	1/	1.8
29.0+	1.0	1/	-	-	1.0
Total	5.5	3.2	-	0.6	9.3
Alaska - Interior					
1.0 - 5.0	5.6	-	-	26.1	31.7
5.0 - 11.0	17.9	-	-	44.3	62.2
11.0 - 19.0	9.2	-	-	15.9	25.1
19.0 - 29.0	7.3	-	-	0.3	7.6
29.0+	2.4	-	-	-	2.4
Total	42.4	-	-	86.6	129.0

Table 11.--Total green weight of aboveground hardwood tree biomass on commercial forest land in the western United States by species, diameter class, section, and region (continued) 11-2

(Million green tons)

Section, region and diameter class	Cottonwood and aspen	Red alder	Oak	Other hardwoods	Total all hardwoods
Pacific Southwest					
1.0 - 5.0	0.1	0.4	15.7	14.9	31.1
5.0 - 11.0	0.1	0.3	19.9	14.5	34.8
11.0 - 19.0	0.8	1.5	43.9	39.3	85.5
19.0 - 29.0	<u>1/</u>	0.5	24.6	20.1	45.2
29.0+	<u>1/</u>	0.1	9.9	8.4	18.4
Total	1.0	2.8	114.0	97.2	215.0
Northern Rocky Mtn.					
1.0 - 5.0	1.6	-	-	0.8	2.4
5.0 - 11.0	8.2	-	-	2.8	11.0
11.0 - 19.0	5.9	-	-	0.6	6.5
19.0 - 29.0	2.4	-	-	0.1	2.5
29.0+	0.2	-	-	0.1	0.3
Total	18.3	-	-	4.4	22.7
Southern Rocky Mtn.					
1.0 - 5.0	14.5	-	-	1.3	15.8
5.0 - 11.0	75.9	-	-	2.3	78.2
9.0 - 19.0	38.5	-	-	0.9	39.4
19.0 - 29.0	4.0	-	-	0.4	4.4
29.0+	0.1	-	-	<u>1/</u>	0.1
Total	133.0	-	-	4.9	137.9
Total West	218.2	313.4	139.6	337.8	1,009.0
<u>1/</u> Less than 0.05 million green tons.					

Table 12.--Total green weight of aboveground tree biomass on commercial forest land
in the United States by ownership, section, and region

(Million green tons)

Section and region	National Forest	Other public	Forest industry	Other private	Total, all ownerships
New England	67.0	80.9	863.9	1,444.9	2,456.7
Middle Atlantic	131.8	465.3	277.1	3,173.7	4,047.9
Lake States	268.4	623.2	255.8	1,266.9	2,414.3
Central States	165.9	99.4	50.3	2,405.2	2,720.8
Total, North	633.1	1,268.8	1,447.1	8,290.7	11,639.7
South Atlantic	299.7	136.7	427.7	2,975.4	3,839.5
East Gulf	135.5	121.5	498.2	1,663.4	2,418.6
Central Gulf	191.9	132.7	675.9	3,111.7	4,112.2
West Gulf	317.2	124.4	1,059.0	2,477.1	3,977.7
Total, South	944.3	515.3	2,660.8	10,227.6	14,348.0
Pacific Northwest	2,074.3	837.9	826.4	544.2	4,282.8
Coastal Alaska	1,151.5	75.2	0.1	15.2	1,242.0
Interior Alaska	-	214.9	-	11.1	226.0
Pacific Southwest	815.8	45.8	240.5	329.2	1,431.3
Northern Rocky Mtn.	1,244.6	204.0	155.9	319.6	1,924.1
Southern Rocky Mtn.	587.0	131.7	1.0	176.0	895.7
Total, West	5,873.2	1,509.5	1,223.9	1,395.3	10,001.9
Total, All Regions	7,450.6	3,293.6	5,331.8	19,913.6	35,989.6

Table 13.--Total green weight of aboveground tree biomass on commercial forest land
in the North by ownership, section, region, and State

(Million green tons)

Section and State	National Forest	Other public	Forest industry	Other private	Total, all ownerships
New England:					
Connecticut	-	8.1	-	92.4	100.5
Maine	3.0	22.9	728.4	666.0	1,420.3
Massachusetts	-	22.8	1.9	150.2	174.9
New Hampshire	43.2	8.4	81.7	241.0	374.3
Rhode Island	-	1.6	-	18.9	20.5
Vermont	20.8	17.1	51.9	276.4	366.2
Total, New England	67.0	80.9	863.9	1,444.9	2,456.7
Middle Atlantic:					
Delaware	-	1.5	3.1	35.9	40.5
Maryland	-	26.3	16.1	239.2	281.6
New Jersey	-	21.9	1.1	104.6	127.6
New York	-	63.7	81.6	855.4	1,000.7
Pennsylvania	47.6	326.4	88.6	1,034.1	1,496.7
West Virginia	84.2	25.5	86.6	904.5	1,100.8
Total, Middle Atlantic	131.8	465.3	277.1	3,173.7	4,047.9
Lake States:					
Michigan	114.9	212.5	139.2	563.8	1,030.4
Minnesota	84.3	267.6	37.4	273.0	662.3
North Dakota	0.1	1.4	-	14.4	15.9
South Dakota (East)	-	3.4	-	8.2	11.6
Wisconsin	69.1	138.3	79.2	407.5	694.1
Total, Lake States	268.4	623.2	255.8	1,266.9	2,414.3
Central:					
Illinois	9.0	3.2	0.6	154.6	167.4
Indiana	9.2	14.9	1.2	190.5	215.8
Iowa	-	8.2	0.9	66.9	76.0
Kansas	-	2.3	-	55.9	58.2
Kentucky	56.1	26.0	21.8	907.7	1,011.6
Missouri	76.3	16.5	17.8	479.5	590.1
Nebraska	2.5	1.2	-	35.0	38.7
Ohio	12.8	27.1	8.0	515.1	563.0
Total, Central	165.9	99.4	50.3	2,405.2	2,720.8
Total, North	633.1	1,268.8	1,447.1	8,290.7	11,639.7

Table 14.--Total green weight of aboveground tree biomass on commercial forest land
in the South by ownership, section, region, and State

(Million green tons)

Section and State	National Forest	Other public	Forest industry	Other private	Total, all ownerships
South Atlantic:					
North Carolina	102.5	40.6	136.9	1,238.6	1,518.6
South Carolina	60.9	43.4	172.2	737.5	1,014.0
Virginia	136.3	52.7	118.6	999.3	1,306.9
Total, South Atlantic	299.7	136.7	427.7	2,975.4	3,839.5
East Gulf:					
Florida	60.8	67.0	237.1	499.1	864.0
Georgia	74.7	54.5	261.1	1,164.3	1,554.6
Total, East Gulf	135.5	121.5	498.2	1,663.4	2,418.6
Central Gulf:					
Alabama	50.3	31.3	336.3	1,288.4	1,706.3
Mississippi	93.3	46.1	249.2	984.1	1,372.7
Tennessee	48.3	55.3	90.4	839.2	1,033.2
Total, Central Gulf	191.9	132.7	675.9	3,111.7	4,112.2
West Gulf:					
Arkansas	208.4	50.4	375.4	839.4	1,473.6
Louisiana	49.8	38.0	323.2	837.2	1,248.2
Oklahoma	12.7	19.9	57.5	160.7	250.8
Texas	46.3	16.1	302.9	639.8	1,005.1
Total, West Gulf	317.2	124.4	1,059.0	2,477.1	3,977.7
Total, South	944.3	515.3	2,660.8	10,227.6	14,348.0

Table 15.--Total green weight of aboveground tree biomass on commercial forest land
in the West by ownership, section, region, and State

(Million green tons)

Section and State	National Forest	Other public	Forest industry	Other private	Total, all ownerships
Pacific Northwest:					
Oregon	1,396.8	427.4	373.6	244.2	2,442.0
Washington	677.5	410.5	452.8	300.0	1,840.8
Total, Pacific Northwest	2,074.3	837.9	826.4	544.2	4,282.8
Coastal Alaska	1,151.5	75.2	0.1	15.2	1,242.0
Interior Alaska	-	214.9	-	11.1	226.0
Pacific Southwest					
California ^{1/}	815.8	45.8	240.5	329.2	1,431.3
Northern Rocky Mtn.:					
Idaho	540.1	90.7	80.4	108.9	820.1
Montana	506.3	89.9	72.7	176.6	845.5
South Dakota (West)	39.1	2.8	0.7	6.6	49.2
Wyoming	159.1	20.6	2.1	27.5	209.3
Total, Northern Rocky Mtn.	1,244.6	204.0	155.9	319.6	1,924.1
Southern Rocky Mtn.:					
Arizona	101.6	47.5	-	5.1	154.2
Colorado	295.3	25.6	0.6	90.8	412.3
Nevada	2.8	0.2	0.4	3.5	6.9
New Mexico	95.5	40.8	-	56.3	192.6
Utah	91.8	17.6	-	20.3	129.7
Total Southern Rocky Mtn.	587.0	131.7	1.0	176.0	895.7
Total, West	5,873.2	1,509.5	1,223.9	1,395.3	10,001.9

^{1/} Includes Hawaii

GLOSSARY

Tree biomass - the green weight of the wood and bark above the 1-foot stump.

Merchantable stem - the main stem of the tree between the 1-foot stump and the 4-inch top; wood and bark.

Tree crown (top and branches) - the main stem above the 4-inch top plus branches, excluding the foliage.

Growing stock trees - all live trees of commercial species, 5.0 inches dbh or larger, except rough and rotten trees.

Rotten trees - live trees of commercial species that do not contain a sawlog, now or prospectively, primarily because of rot, (e.g. when rot accounts for more than 50 percent of the total cull volume).

Rough trees - (a) live trees of commercial species that do not contain a sawlog, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross tree volume in sound material; and (b) all live trees of noncommercial species.

Small trees - live trees that are less than 5.0 inches dbh.

Commercial forest land - forest land producing or capable of producing annual crops of industrial wood at not less than 20 cubic feet per acre and that is not withdrawn from timber utilization.

Industrial wood - All commercial roundwood products except fuelwood.

Commercial species - tree species suitable for industrial wood products.

Other public lands - lands administered by such federal agencies as the Bureau of Indian Affairs and Bureau of Land Management and those administered by State, county, and municipal organizations.

Forest industry lands - Lands owned by companies or individuals operating wood-using plants.

Other private lands - all private ownerships except forest industry lands.

Softwoods - coniferous trees, usually evergreen, and having needles or scale-like leaves.

Hardwoods - dicotyledonous trees, usually broad-leaved and deciduous.

